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inhabitants of the moon, unfortunately, were all suffocated by the smoke arising from the burning of the endless rope mentioned above, for which reason the moon to this day is uninhabited. Chong's only hope, therefore, was in men on earth, and to confess the truth, in the second place, his hope was in woman also. He had made a careful study of the sex, and he began to like them. So he remonstrated with his father, showing that there was one family, the chief of which was a man by the name of Ching-Ching, a man who was fond of fishing and skilled in navigation, who had never omitted the customary sacrifices, and that he and his beautiful daughters, seven in number, and of whom but two were married, ought to be saved from the general destruction. Chong-fu's wrath was mollified by the remonstrance of his son Chong, so he called forth the man Ching-Ching, and bid him build himself a ship to float him and his family above the waters which Chong-fu was about to send upon the earth to flood it and annihilate men.* And the waters rose in their beds until they flooded the earth to the top of the highest mountains, and they drowned all mankind and all living creatures with the exception of those who had taken refuge in the ship of Ching-Ching. When the waters subsided, Ching-Ching left the ship and returned to the land with his wives and daughters and one of his sons-in-law. The other, however, remained on board the ship to carry on commerce with foreign nations, on the great rivers and across the sea.†

Ching-Ching lived to be five hundred and seventy-four years old, when three children were born to him by his three wives, Hi-po, Hen, and Ting. They were all sons, and in due time they took unto themselves wives, and brought forth many children who spread over the land, and inhabited the same, and planted rice and tea, green and black, and sold it to the outside barbarians at high prices, and got from them garments, and swords, and bows and arrows, and fies, and silver, and gold. And Ching-Ching was one thousand and five hundred and thirteen years old when he died.

To comprehend and demonstrate that a thing is not beautiful, is an ordinary pleasure, an ungrateful task; but to discern a beautiful thing, to be penetrated with its beauty, to make it evident, and make others participate in our sentiment, is an exquisite joy, a generous task. Admiration is, for him who feels it, at once a happiness and an honor. It is a happiness to feel deeply what is beautiful; it is an honor to know how to recognize it. Admiration is the sign of an elevated reason served by a noble heart. It is above a small criticism, that is skeptical and powerless; but it is the soul of a larger criticism, a criticism that is productive: it is, thus to speak, the divine part of taste.—*Cousin*.

* The record of the flood appears to be common to all eastern nations, and differs only from the record of the Bible in date and minor details.

† It is supposed by Chinese philosophers that in this manner the American continent was peopled.

Architecture.

AMERICAN INSTITUTE OF ARCHITECTS.

Meeting of December 7, 1858.—The reports of the Library and Furnishing committees having been accepted and disposed of, and the general business of the evening transacted, Mr. Henry Van Brunt read the following paper, on

CAST IRON IN DECORATIVE ARCHITECTURE.

It cannot be doubted that the purest eras of architecture have been those in which building material has been used with the most honest regard for its nature, attributes and capacities. On the other hand, the histories of the decline of every pure style and the rise of every impure style, have been but illustrations of improper uses of the constructive means which nature everywhere yields for the comfort of mankind. She offers to enter into a fair alliance with us; to combine her innate powers with our adaptive skill in the production of objects of beautiful utility. But when those natural powers are misused—when, forgetting that we are their allies, we act as their lords, a virtue has gone out of our works which no human cunning can supply. We admire the Pointed buildings of the 13th century, because instinctively we recognize in them the complete presence of this alliance. Nature yields somewhat of her wild rudeness to man, and man stops wisely short of the full scope of his power for the sake of nature, and the result is a perfect stone architecture. There is nothing in it which makes us forget the quarry. The skill of the workman does not attempt to conceal or contradict the skill of God. But when this stone becomes unnaturally twisted and flittered away into the lacework of the Mechlin tower, or the pendant roof of Henry VII.'s chapel; when it is violently contorted into the wild vagaries of the Cinque-Cento, however much we may wonder at the cunning workmanship, we cannot but lament the conquest of nature in those bewildered mazes and empty fantasies. The moment when the holy alliance was broken, the moment when the stone was taught to forget its native frown of power, its preadamite sternness, and was made to smile and flutter under the chisel, the life of that style departed. For the aim of true art is not conquest over material, but rather a fine compromise with material. Thus it is evident that there is much more true architecture in the carving of an early English capital, where, while all the sentiment of the leaf is retained, the obstinate hardness of the stone is not denied—or even in the rude monolithic dome of Theodorici's Mausoleum at Ravenna, so conscious of its marble quarry at Istria—than in any of the wonderful tabernacle-work of Germany in the 14th and 15th centuries.

But if nature is thus revenged for conquest over her by misapplied skill, the results of simple neglect of her are hardly less disastrous. The aggregate growth of the human mind constantly develops out of nature new means and appliances, new mechanical resources and constructive materials. These are her progressive steps, and she asks of us, her allies in art, a corresponding activity.

In neglect of this activity lies a principle fatal to architecture as a fine art; and this, touching as it does the inventive pride of the artist, is perhaps especially deserving our attention. No fine art is so dependent as this on scientific invention, and consequently to none are the principles of conservation and conventionalism so dangerous. Architects become antiquaries when they feed exclusively upon the past, and are content to reproduce

archæological curiosities and copy shapes, however beautiful, of a fossil art, without reanimating them with the breath and spirit of the present. And when, through this respect and love for old things and old ways of doing them, the powers of architectural invention are suffered to lie dormant, amid intense intellectual activity as regards the arts of utility, the result is necessarily that architecture exists merely as a cold respectful reminiscence, a lifeless system of imitation and eclecticism. Such a system, destitute as it must be of that inspiration which is the life of all fine arts, cannot be exponential of any age of scientific activity. If we should transplant the sphinx of Egypt into the square of a modern city, its cold stony stare would not have less sympathy than this with the life surging around its base.

It becomes us then to look around us, and to ask ourselves with special solicitude if in our architectural works we are expressing the character of the age in which we live. Are we properly exercising our high and peculiar prerogatives of monumentalists? Is ours a *representative architecture*?

In this era of great discoveries of new things and of new applications of old things, the rapid advancement of mechanical and constructive science has opened an immense field for all the imaginative activity and inventive skill which can be brought to bear on architecture. And many of the requirements of modern buildings are such as cannot fairly be met without constructive devices and corresponding architectural features, for which precedent cannot be found in mediæval or classic times. This is true not only of commercial, but of domestic and, in a measure, of ecclesiastical buildings. With all these facilities and incentives about us, Art should be a living and growing reality; and as such, though subject to the faults of excessive vitality, it would contain a hundred fold more elements of happiness for the people, than if taken pure and unspiced from the fountains of antiquity. For men have a right to expect new expressions from esthetics, as fast as they get new revelations from the sciences. Our tendency, instead of being eclectic and conservative, should be inventive and reformative. A new method of decorative construction should arise with each new mechanical or constructive means placed in our hands. It is obviously not proper or just to reject contemptuously new building materials and new constructive devices, because they were unknown to Phidias, to Palladio or William of Wyckham, and are unsuited to their styles. Is it not noble rather to weigh seriously their advantages and disadvantages, and suffer no formal rule of scholiast or warning of pedant, no refined deduction of the theorist to scare us from adopting them, if worthy the immortality of art? The conviction forces itself upon us that true architecture does not exist where innovation and novelty of any kind are dreaded.

If we examine into the history of any period of the world when the art of building was in reality a fine art, we will find that ample and characteristic use was made of every fitting material and mechanical appliance then known, even though principles perfected by the study of previous generations had to be sacrificed to the innovation. Wood and brick were as readily received and as fairly and tenderly treated as stone. The glorified lintel of Greece gave place to the rude arch of Rome, and this, though sanctified by Byzantium and Lombardy and the Norman, though made venerable by the accumulated art of centuries, yielded to the novelty and superior constructiveness of the pointed arch. Thus was the progress of beauty coincident with the advance of science. Thus, like the fabled lovers of the "Day Dream," they walked together with mingling gar-

ments through the nations. Happy would it be for us could we pursue the analogy and say with the poet:

"And far beyond the hills they went
To that *new world* which is the old!"

But is the presence of this union known to us? Does the beauty of art still keep pace with the advance of science? Or rather are there not among us antique prejudices against such an association—are there not tender sensibilities shrinking from the shock of accustomed things?

This is called an *iron age*—for no other material is so omnipresent in all the arts of utility. Whether moulded from the furnace, battered on the anvil, or rolled in the mill, it is daily developed for new forms and new uses. Its strength, its elasticity, its ductility, its malleability, its toughness and its endurance render it applicable to a thousand exigencies of manufactures; and it has arrived at last to be the exponent of the noblest physical qualities of manhood. With all these wonderful facilities, it has been again and again offered to the fine arts. But architecture, sitting haughtily on her acropolis, has indignantly refused to receive it, or receiving it, has done so stealthily and unworthily, enslaving it to basest uses and denying honor and grace to its toil. None can have failed to remark with what a storm of anathema and abuse the use of iron in decorative construction has been welcomed by every writer on the fine arts and by nearly all architects; yet they will avail themselves of it in trusses, they will use it in concealed construction, in anchors and ties, secretly to strengthen walls and relieve arches. They have *authority* too for making ornamental hinges of it for their Gothic doors. But as for making an honest system of architecture out of a material which is found so invaluable in the gravest exigencies of construction, this is quite out of the question. For how degrading and pernicious, they will cry, are its decorative uses! As it comes from the mould, where is the flush and elegance of our carving, where is the noble expression of free labor, of individual sacrifice, of personal thought and exertion in it? And as it comes from the anvil, what aspiration or solemn purpose can there be in it? How shall we sweeten its laborious curves or enrich its wire-drawn construction? Where, in short, are all those qualities by which our ancestors have rendered architecture an ennobling and sanctified art to us? It is in this spirit that critics on art have been accustomed to speak of this material as applied to decorative architecture, singing to us meanwhile the same song of labor which the lodges in old times raised among the scaffoldings of Strasbourg, as if the grand master could square his emblematic ashlar in the stone yards of New York, and the companion exercise his "Liberty of the workmen," in the new works on Broadway! They have called this in derision "a cast iron age." What if it is? Let us then make a cast iron architecture to express it; and if we set about it earnestly and thoughtfully, it is certainly within the bounds of possibility to ennoble that much reviled material.

The prejudice among men of taste against this new style of building has doubtless been much increased by the many crude attempts already made to adopt it as the legitimate offspring of true art. Architects have too readily set their faces against this adoption, believing it subversive of their professional reputation, and utterly antagonistic to their studies of the antique, whose forms of art are naturally so sacred and oracular to them. But the public, not so influenced by the power of old habit and classic association, and believing it expedient and proper to build in iron, have done so, notwithstanding the opposition of

professional men. Thus, the first training of this child of art has fallen into incapable hands, and the result has been what I have been led to believe all true artists deplore. A whole Olympus-full of immortal gods had to constitute themselves a college of tutors to the infant Hercules, to give *finesse* and strategy and skill to his heroic strength, ere he could accomplish his twelve labors. And so this new child, Hercules, with powers a thousand times more heroic, which the spirit of the age has so earnestly offered for our nourishment and guidance, needs all the care and thoughtful tuition we can bestow. Else, misdirected, out of the very abundance of those powers will grow imitations more base, and monstrosities more hateful than they have even yet exhibited. For, instead of such a modification of old forms as to accommodate them in every respect to the peculiar conditions of the new material, so that at length a new style might be created expressive of its before unapplied attributes—instead of this, we behold those old forms expressed in iron without the slightest alteration, ashlar joints and all the ordinary necessities of masonry, imitated with careful nicety, while all the devices of iron construction are concealed with peculiar cunning.

Of all the arguments which have been urged against the decorative use of iron in architecture, perhaps the most specious have been those with reference to *machine ornament* and cast iron work generally, as entirely at variance with all preconceived notions of what ornament should express, viz.: the happiness or the sacrificial spirit of the workman, his individual thought and personal presence, as it were, in his work. Hence, as men do not often think or act the same thing twice, comes the precept so earnestly enunciated by Ruskin: "All noble ornamentation is perpetually varied ornamentation, and the moment you find ornamentation unchanging, you may know that it is of a degraded kind or a degraded school." And monotony, he continues, should only be used subordinatedly, as in some architectural mouldings, and merely as a contrast to variation in more important members. This is certainly a lovely and precious principle in its application to a stone architecture in a mediæval age. For the greatest peculiarity of Gothic times was personal labor and enterprise. Whether in the arts of war or peace, it was with the *hands* that all work was done; and so all industrial arts were, in the most proper use of the word, *handicrafts*. The Gothic spirit then was a *handicraft spirit*, and, to be expressed in a noble architecture, demanded the sacrifice and thought of a varied ornamentation. Now the age which we are called upon to express is not one of individualities, but of aggregates. It is not one of barbarous sacrifice either of time, labor, money or material, but of wise economy. Science has nearly destroyed personal labor, and has substituted the labor of machinery, and almost all the industrial arts are carried on not by hands but by machines. In fact, we have mechanics now, not handicraftsmen, who work not so much out of devotion to any craft, as for the homely necessities of life. Labor now is the means and not the end of life. Therefore the architecture, to express our spirit best, is not one of personal thought and aspiration in the workman; it is not one where the individual irregularities of genius or enthusiasm may find scope in tender or grotesque idiosyncrasies of detail; but rather one of system, and, as regards the workman one of organized subordination; it is essentially an architecture of strict mechanical obedience. The gargoye, the corbel and the boss, as vehicles of personal thought in the sculptor, would be acts of rebellion with us. The principle of

the "Liberty of the Workman" no more belongs to our age than feudalism. However lovely it may be with all its poetic and romantic associations in cathedral architecture, it is of another age, and we cannot and should not hope to revive it. When from amid the great bustle and activity of our times, we look back upon the Gothic age, and contemplate its serenity and statuesque repose, its deliberate and dreamy thoughtfulness, as it were, in all those matters of science and art embodied in architecture; when we behold how slightly time and labor were considered in questions of high art, how years passed by as days, and all effort was patient, simple, earnest and slow, we at once comprehend the secret of the success of Gothic art. Yet may not our own spirit, though apparently prosaic and leaning too much towards mere utilities, though rejoicing in clamor and hurry, may it not have its own peculiar high capacities for artistic expression? May there not out of its sternest necessities and most practical exigencies be born new principles of beauty to adorn our own age as those old ones were adorned? Let us not then despair because, when measured by antique standards and principles, our art seems ill-grown and awkward. Our new conditions demand new standards and new principles. If, as it affected practical art, the Greek spirit was an intellectual spirit,—the Roman, an ostentatious spirit—the Mediæval, a sacrificial and handiwork spirit, so ours should be eminently a mechanical spirit. It is absurd to mourn over our degeneration, when some of this spirit, instinctively and in spite of ourselves, gets into our reproductions of old forms and seeks to acclimate them to our atmosphere. For to this spirit we owe most for which our age is honorable above all others, and why should it not move the wings of art as well as the wheels of science? Thus it is not just to consider and criticise the architectural decoration of the present day *objectively*, as we do with Gothic details, but *subjectively*, or as it relates to and harmonizes with the general design. We should not in our judgment have thought for the immediate and mechanical producer of the effect, as an intelligent being, but simply for the effect produced, and criticise that effect abstractedly as it appeals to our sentiments of the beautiful and fitting. If this argument be admitted, no objection remains against ornamentation in cast iron, or any other material, provided that ornamentation offends not against any abstract rules of taste and propriety, and provided also there is no inconsistency between the ornamentation and the material in which it is wrought.

Now a mechanical architecture is evidently one of strict unities and formal repetitions, as expressive of the mechanical means by which it is produced. And these qualities, under the skillful treatment of the architect, are peculiarly exponential of an age which seeks not for instruction or emotional impulse in a building, as the Greeks did from their friezes and pediments, the Romans from their panelled bas-reliefs, and more especially the mediæval Catholics from the sculpture of their porches, but rather of a period which, having ample instructional and emotional resources in other directions, expects in an edifice little more than the pure architectural expression of fitness for its peculiar purposes. How in instinctive obedience to this demand there has gradually crept into our present architecture those strict uniformities and formal repetitions, which have laid it open to the charge of thoughtlessness, it is useless here to recapitulate, nor is it necessary to prove that these qualities are much more natural in a moulded architecture than in a sculptured one, where they are suggestive of a weary servility of workmanship and a painfully laborious reproduction of one idea. Now inas-

much as nature, when she urges upon us the use of iron, actually demands from us a mechanical treatment of it with the mould, we may fairly expect that the principle of monotony, usually so repugnant to a stone architecture, may under these more favorable circumstances be elevated to a beauty and an honor. For as regards truth of material, monotony is as noble in iron as variety is in stone. And even when we look upon monotony abstractedly in all architectures, we will find that, in a purely æsthetic point of view, and without reference to any external conditions of mere execution, it is by no means a despicable quality. In general the more earnestly an edifice appeals to the sentiment of human pride, the more powerful we will find is the influence exerted over the design by this very principle of monotony. For architectural repetition, besides being expressive of an "artificial infinity," is the quality which most distinguishes the works of man from the works of God, *which never are repeated*, and the farther man gets from nature in his creations, without denying the instructive beauty of her forms, the more boldly he asserts his intellectual freedom and the creative powers of his mind. It is unquestionable that a certain degree of artful repetition, both in primary and subordinate positions, exercises much fascination over the mind of the beholder, provided there is not implied by it any poverty of thought or servility of workmanship. But there is certainly a triumph of human art when man in his works reconciles *repetition*, which, as it expresses his creative competition with nature, is Godlike, with *variety*, which, as it expresses the versatility of his genius and his admiration for nature, is lovely. Every observing man can recall how pleasantly he has been affected by such dispersed surfaces as are not unfrequent in some of the later developments of Gothic, and this too, notwithstanding the implication in it of human machine work. How much more charming it is, therefore, in its frequent occurrence in the terracotta architecture of Lombardy, where it is the legitimate expression of the mould! But, it may be asked, how can the principles of monotony be so wedded to those of variety as not mutually to destroy each other?

In the west front of the cathedral at Monza (S. Maria in Strata) the great rose window is flanked on either side by a pointed window of the same height, and all the spandrels being occupied by appropriate decoration, the whole group is divided and framed in by a system of small square panels or quarries, seventy-four in number, each containing a minute foliated design. At first sight, it is doubtless the principle of repetition which pleases in this group; but the pleasure and value of the whole is infinitely increased on discovering that in all these seventy-four quarries there are twelve different foliated designs or symbols, so subtly arranged that it needs the closest inspection to detect any recurrence, though each pattern is repeated about six times. There is a perfect expression of monotony, and also a perfect architectural expression of variety, but the latter so subordinated, that the whole at once satisfies every requisite that the laws of artistic beauty can demand. This example is quoted the more readily because it is an example in moulded brick and fitted constructively and æsthetically for use in cast iron.

The oft-repeated objections to this material, on the ground that it forms merely a superficial system of decoration, arise, I presume, from the assumed premises that, as such systems do not illustrate, but rather effectually conceal all constructive expressions, they are consequently untrue and inadmissible. Now as regards such veneering processes as the Italians were often

guilty of, out of love for their sumptuous and costly marbles, that they might thus display the variety and richness of their natural colors—and as regards the same processes which *we* make use of out of no such love, but rather for the sake of the vacant ostentation of a white marble front, this objection is valid in the fullest degree. For inasmuch as there is no acknowledgment of the superficiality in any of these decorative systems, but rather a studious attempt to force upon the mind the conviction that they are constructive, and that the richness of the material extends deep into the mass of the wall, they are deceitful. But as regards iron, such deceit is scarcely possible, for no one could for a moment suppose that this material would be used in solid blocks like masonry, and therefore its very texture confesses its superficiality. Besides this, every fair and well-conceived cast-iron decoration, avoiding base imitation of all classic or other solid architectures, would take especial pains to acknowledge this its peculiar quality, either by drawing attention to the constructive expedients which this quality demands, such as rivets and anchors, or by permitting the *backing* material (the use of which has been found to be absolutely essential to comfort in this climate) to be honestly apparent in solid buttresses or through open work in the iron. Here are presented means for an entirely new architectural expression, arising directly out of that only pure fount for all such expressions—constructive necessity. This peculiar character of superficiality seems as legitimate a source for architectural expression, as thickness of wall was made by the Lombards, when they emphasized it so successfully in their broad, flat piers and panels and in the artificial perspective of their window and door splay; or as thinness of wall was made by Gothic artists when the necessity of buttresses and pinnacles to withstand the thrusts of vaultings was so fairly acknowledged and signally honored by them. So let the cast iron decoration of our own age not only confess but boast its superficiality; and if architecture is not a dead art among us, if some of the enterprise and inventive genius of our age may be made to inspire this the most practical of the fine arts, it is hardly a frivolous speculation to assert that out of this necessity may grow a new system of architectural decoration, in which will be as readily acknowledged the peculiar expression of our cultivation as the Greeks confessed in the friezes of the Parthenon.

The cheapness of iron, its rapidity and ease of workmanship, the readiness with which it may be made to assume almost any known form, instead of being, as Ruskin asserts, "so many new obstacles on our already encumbered road," are qualities which, in the present state of society, render that metal especially precious as a means of popular architecture. For costliness, difficulty, and laboriousness, so confine the uses of architecture to the monopoly of the wealthy, that this magnificent art in its domestic applications, becomes expressive merely of distinctions of social rank, merely a means of ostentation, instead of standing as the exponent of the highest refinement and cultivation of the people—the universal handwriting, as it were, on our walls, which shall speak eloquently the character of our age. Let us not, then, shrink from cast iron as too base and cheap to be translated into a noble architecture, as too common for such elegant uses; but as this art is our symbolic and monumental language, let us rather consider that the more common and available its elements are, the more truthful and just will it be in this high capacity. The elements of a spoken language, *words*, are common; yet while in the mouths of the vulgar they are slang, on the lips of the wise they are oracles and

epics. So an architecture which, by facilities of material, is made applicable to all the grades and conditions of society, from which is banished all quaint restraints of ancient laws, and which suffers no effete precedent or formalism to stand in the way of its boundless pliability and exhaustlessness—such an architecture truly deserves the name of language.

This is not, of course, intended to imply that precedent should be neglected, for architecture is essentially inductive, and its progress is made, not so much in the invention of new forms as in the gradual and almost imperceptible growth and development of new things out of old things. Thus, should we desire to express the stately and formal in cast iron architecture, we might take, perhaps, the Florentine Gothic of Arnolfo da Lapo in the cathedral, and of Giotto in the Campanile, as a starting point, and from the peculiar surface architecture of this style, with its distinctly defined panels, so suggestive of metallic plates, might easily be elaborated an honest system for cast iron, full of repose and dignity. Even the rivets or bolt-heads and the anchors might be made to bear an appropriate part in the decoration. The brick or stone constituting the *backing* of the wall could appear as piers, perhaps, dividing the composition into large and noble bays, or it could show in its working capacity in discharging arches severe and undecorated. The terra-cotta architecture of the valley of the Po has already been suggested as full of hints which would render valuable assistance to the artist in this new labor; for it is not only a legitimate, moulded style, but one peculiarly expressive of the variation which ornament undergoes in its transference from one material to another—a variation which we, in similar contingencies, have been so little sensitive to. The mechanical repetitions of Gothic panels, which form so exclusively the surface decoration of the English perpendicular style, and the frequent recurrence of formal vertical lines in the piers and mullions of that style, together with the height and slenderness of shafts—all these are *motives* which one who would compose a stately edifice of iron would scarcely neglect.

Or would we desire to build in a more sportive and fantastic mood? What material better fitted architecturally to express such attributes than this? Adam Kraft and Peter Vischer recognized this fact so early as the fourteenth century, when they cast in bronze the delicate font and shrine of St. Sebaldus and the beautiful fountains of Nuremberg. It would have been well for their German contemporaries, from Bruges to Freiburg, had they acknowledged bronze or iron, rather than stone, as the fitting material for the elaborate fretwork of their tabernacles, domes, and spires. For when these works began to call for the pride of the workman, rather than the spirit of the artist, to accomplish them; when their difficulty began to be their only honor, it was high time for them to be transferred to a plastic material like iron; and then the true artist might once more have resumed his studies, and elevated the old forms into new and wonderful expressions of beauty. Are not these old forms *ours now* to work upon? They say that Bruges laughs in the playfulness of her belfries and pinnacles. Is there not an element of happiness among us which requires some such expression, and may not the means of that expression come from the mine as well as the quarry, the mould as well as the chisel? This seems scarcely visionary, for the discreetest economy of our times does not so much overshadow our enthusiasm and joyfulness as to forbid their being expressed in so *cheap* a material as cast iron. In fact, for our comfort it may justly be said, that even in the happiest days of that "quaint old town of toil

and traffic, quaint old town of art and song," had labor been as costly as it is with us, not all their enthusiasm and joyfulness would have built up those pinnacles and gables, so pleasant to see, but so beautifully useless! In the latter part of the thirteenth and beginning of the fourteenth century, a feature appeared in German Gothic which, though according to many critics highly objectionable in a stone architecture, appears peculiarly adapted to iron. I refer to those lines of tracery which were sometimes spread over window and wall, in the manner of open screens, distinct and separate systems from those incorporated into the body of the building, as in the west front of Strasbourg and in Cologne, and in one instance only, I believe, in England, the easternmost part of the clerestory wall of the choir of York minster. As a *motif* for composition in iron in its more fantastic moods, this seems especially valuable, inasmuch as it is suggestive of a distinction between the ornament and the construction of a building sufficiently broad to separate the playful from the serious, without disturbing their architectural affinities. How appropriate to the peculiar conditions of our material, that the solid wall which does the serious work behind, should be plainly seen and acknowledged, and that decorative openwork should beguile its surface with everchanging shadows, and half veil the painful arch of brick or stone with fancies that make sport of its frowning labor! Such a parasitical use of iron, it must be admitted, is not its noblest use, nor do we fairly test its decorative capacities till it is made to illustrate its own constructive properties. Yet it is evident that in all cases this peculiar interstitial feature could be made one of the most important characteristics of the style. It is understood that architecture is in a great measure the art of shadows, and hitherto the *chiaro-oscuro*, as it were, of architectural design has been limited to contrasts of masses and lines of shade with masses and lines of light. It has been considered the peculiar privilege of the painter to break lights into the mass of his shadows, and by these quick and sparkling touches to enhance its repose and depth, and give brilliancy and life to his subject. Now, the use of interstitial decoration would at once place this power in the hands of the architect, and open to him a large field for new and delicate effects in his designs. Take the simplest instance, a pierced trefoil in the spandrel of an arcade; the sun, finding thus an unencumbered pathway through the thin ironwork, would paint the trefoil in light against the dark wall behind. The open pattern, stencilled in shadow, would be repeated in light. The sun, in his progress, would delight in it, would sport with it, and make grotesque and changeful mockery of it all the day long; he would make anagrams of our ornamentation, and sprinkle unexpected interpretations of it among the shadows. No masonry could yield a negative copy of its tracery with such readiness, its ponderous and serious nature admitting only the "sleep" of broad sunshine or shadow upon its surface. The Saracenic styles, with their profuse geometrical open-surface ornament, their pierced arabesques, and the lily patterns that fringe their level sky-lines, are full of *motives* for cast-iron. And there is something very suggestive of the exceeding pliability of iron in that fantastic tendency of the Saracens ostentatiously to conceal or defy all constructive necessities, in the hollow intrados, the piercing and fretting of the apparent archivolts, the wild overhanging cusps, the horse-shoe arch, the square reticulated framing-in of their pointed and ogival apertures, the honey-combed-pendentive, and all the savage but beautiful conceits with which they loved to beguile and deny their labor and science. In short, it

will at once be perceived by all who have sought for instructive precedent and for authorities among ancient buildings, how many lovely and noble features there are which have hitherto been considered too costly for our use, how many quaint individualities which considerations of economy have forbidden our expressing, all of which the facilities of moulded iron not only place within our reach, but offer to us the flattering prospect of excelling, in the same proportion as we excel the ancient builders in opportunities and scope of study.

It is not to be forgotten, that in transferring these old forms to iron, we are met in the outset by the difficulty of imitating with the mould those high reliefs so frequent in rich architectures. But such imitations, presenting this material in an unfair light, as the carvings of masonry are unsuited to its primary condition of inability to be undercut, should be carefully avoided. Indeed, it may well admit a doubt whether the low relief, which the mould so imperatively requires, when assisted in its expression by the contrasts of color, as in the sculpture of the Greek metopes, or the tracery of the Arabs; whether low relief, under such circumstances, does not present quite as many charms as that extreme high relief which some have considered indicative of decline, in its purely architectural uses, because requiring too much masonic cunning to accomplish it. If, for instance, we take an iron capital, none will doubt that this capital would be nobler, both as a constructive feature and as an expression of material, if its ornamentation were *incised* in the manner of Byzantium and the Alhambra, rather than *applied* as with the acanthus leaves in the Corinthian capital; and if depth of shadow is lost in our low relief, we shall find in another of the necessities of cast iron an ample compensation. I refer to *color*. The natural color of iron, besides being unsuited to decorative uses, is liable to the disagreeable changes of oxidation and rust, which also impair its strength and durability. The application of external color, therefore, is very essential to its preservation, and as such, may be used with all the license which art may desire. It is needless here to dwell upon how such an architecture as we have been endeavoring to set forth would be illustrated in all its parts by the judicious application of color; how the unspeakable charm of contrasted tints would add to the value of all its aspects, and how by this a still higher demand would be made upon that inventive genius and that artistic cultivation in the architect, which the present practice of his profession gives him so few opportunities of exercising. Color, in these uses of it, would afford a sensitive test to distinguish the artist from the pretender, and present to all an evident proof of the refinement of the one and the vulgarity of the other.

Nor is it to be forgotten, while taking old models for our guides, that if the constructive properties of our material are to be fairly exercised, very many old axioms and laws of architecture must undergo a fundamental change. The old principles of mural construction, requiring a piling of masses perpendicularly upon each other, requiring a careful economy and division of weight upon its arches, requiring moderation in the width of all openings, especially lintelled ones, and requiring a very strict observance of the necessity of placing the light and airy upon the heavy and massive—these have created in decorative architecture those exact laws of superimposition, intercolumniation, proportion by module, and the like, which have hitherto held tyrannical sway over all our composition. But it is evident that an iron construction does not call so imperatively for a strict observance of these laws, as its properties are such as to

admit masses over voids as well as voids over masses, to admit downward thrusts of almost any force upon any point of its arches without fear of fracture, to admit almost any width of aperture, and almost any slenderness of supports; so that in our iron façades we are not so limited to solid basements, to the open upon the massive, to the inviolability of piers from the foundation through all the stories up to the cornice, to the exact perpendicular centre-lines of apertures and columns, and to a discreet moderation in the width of our openings. On the contrary, the utmost latitude is allowable in these respects, provided there be not too great an offence against those finer æsthetic rules, which, though derived in great measure from old necessities, could scarcely be disregarded at once without danger. When we reflect upon what violations of ancient laws and possibilities we are daily called upon to commit in our street architecture, especially in shop-fronts, the capacities of a real iron architecture to violate these laws and possibilities with complete artistic propriety, and to meet all the strange exigencies of modern buildings, cannot be justly neglected.

It is evident that an architecture so *new* as this would be, if fairly studied, besides hanging out, as it were, our banners on the outward walls, to denote the hearty presence of our inventive spirit and enthusiasm in it, would exercise a direct active influence over the minds of men. For what charm so potent, to break through the weariness of life, as novelty? A new object or a new thought, if it appeals to any of the higher sentiments of humanity, strikes deep into our being, and opens new channels for the escape of many affections which in the monotony of daily experience become stagnant and useless within us. How grateful then the task thus opened to the artist, of creating new things for the surprise of men; of writing a new chapter in the history of architecture, and thereby adding to the happiness and comfort of mankind!

Regular Meeting of December 21st, 1858.—The minutes of the last meeting being accepted, the librarian laid before the Institute several works on architecture, presented since the last meeting, among others, the beautiful work entitled "Graphic Scenes of the Japan Expedition," presented by Messrs. Sarony, Mason, and Knapp, and "Murphy's Arabian Antiquities of Spain," presented by Richard Upjohn, Esq. A vote of thanks was tendered to the liberal donors.

The secretary then presented numerous specimens of Ruolz, Enduits and Colors, forwarded for inspection to the Institute.

After the acceptance of several committee-reports, the election of a Board of Trustees for the ensuing year took place. The following Trustees were elected: Richard Upjohn, Thos. U. Walter, John W. Ritch, Joseph C. Wells, Richard M. Hunt.

Upon motion of J. C. Wells, it was resolved to have the rooms of the Institute prepared for a meeting every Tuesday evening.

Upon motion of R. G. Hatfield, it was resolved, that the second regular monthly meeting (to be held on the third Tuesday of the month) should take place at 3 P.M., instead of in the evening.

The committee on the annual dinner (February 22d) being appointed, and the general business of the evening being finished, L. Eidlitz read the following paper:

CAST IRON AND ARCHITECTURE.

THE paper read before you at the last regular meeting of the Institute must be pronounced a literary production of rare merits. Written with an earnestness and vigor worthy of a bet-

ter cause, it betrays not only extensive reading but also laborious thinking on the part of its author. The materials for the basis of a most ingenious argument are collected with exhaustless industry, and arranged with the skill of a finished writer. The logic, where sound is fortified with a multiplicity of positions, from which favorable views may be had of the author's conquered territory, which, with the unerring skill of the landscape-gardener, is magnified into interminable parks, endless avenues, distant fields, broad sheets of water, yes, even mountains in the background—all on a three-acre lot of most unpromising natural advantages. Where the conclusions drawn are less satisfactory to the discriminating sense of the learned author, Poetry, with her brightest colors, is forced into service, to paint the liveliest and most pleasing scenery for display on a barren stage, ever ready for the performance of tragedy, vaudeville, or, ballet, as may suit the brilliant and versatile genius of a skillful manager, who knows his audience, and thinks it his province to please.

If consistent with the interests of architecture, it would be more in accordance with my feelings to respond to a production of so much merit and of no inconsiderable intrinsic value, with hearty applause, without further comment. But while paying my tribute of admiration to the *manner*, I feel constrained to question the *matter* enlarged upon in the paper before you, and I do so with the confidence that a mind capable of constructing so skillful an argument, will not be discouraged even when convinced of error, but rather stimulated to continue valuable exertions in a worthier direction, to the ultimate advancement of the art and the best interests of the profession.

We are told in the outset, as a fundamental fact, the force of which every unbiased mind must be ready to acknowledge, and which I accept as the text for my argument, and will quote in full, that—

The purest eras of architecture have been those in which building material has been used with the most honest regard for its nature, attributes, and capacities; while, on the other hand, the histories of the decline of every pure style, and the rise of every impure style have been but illustrations of improper uses of the constructive means, which nature everywhere yields for the comfort of mankind.

I wish to continue with what I think will be admitted without argument:—

And by which she guides us unerringly to the attainment of the most perfect expression, the most harmonious fitness, and consequently, æsthetically speaking, to the highest standard of beauty.

We are further told that it is disastrous to go beyond the limits of the indications of nature in the treatment of the material she offers, and that we are culpable also for neglecting to accept all she may present us. What is more, we are expected to make the best use of all the resources which science has developed or may in future develop from the hidden treasures of nature; furthermore, we are admonished that it is our duty to represent the inventions of science in our monuments, in order to be able to answer in the affirmative the important question, are we exercising our high and peculiar prerogative of monumentalists? *Is ours a representative architecture?* It is pointed out to us that this is an era of great discoveries in mechanical and constructive science. Besides this, the requirements of modern buildings are such that they cannot be met by the constructive devices and architectural features of classic and mediæval styles. We are guarded against an unwholesome conservatism, when new elements in their requirements of our structures, de-

mand of us a renewed vitality, rather than a blind imitation of the past.

It will hardly need my cordial endorsement of the above promises to convince you of their soundness, nor of my hearty acceptance of them. I deem it the first duty of the architect (if architecture is to be a living art) that he should be guided in his designs by the requirements of his structures and the best modes of constructing them, without reference to the past, further than this, that the past is our school. We ought to listen to and profit by her experience, for truly she has accomplished marvellous things.

It has always been my sincere conviction that we *could* not, even if we *would*, resist the formation of a new style, or what is equivalent, a progression of old styles in the direction of the advancement of our age in its moral, religious, political, social, and scientific development. As I have dilated upon this subject in a former paper "On Styles," which I expect to continue on some future occasion, I will dwell upon it no longer now, but at once proceed to the contemplation of the means offered to us by the writer of the paper under discussion, which are to give a bold and sudden impulse and an increased vitality to our efforts for the advancement of architectural art.

Let him speak for himself:

This is (he says) an *Iron* age. No other material is so omnipresent in the arts of utility; whether moulded from the furnace, battered on the anvil, or rolled in the mill, it is daily developed for new forms and new uses. Its strength, its elasticity, its ductility, its malleability, its toughness, and its endurance, render it applicable to a thousand exigencies of manufactures, and it has arrived at last to be the exponent of the noblest physical qualities of manhood. With all these wonderful facilities, it has been again and again offered to the Fine Arts. But Architecture, sitting haughtily on her acropolis, has indignantly refused to receive it, etc.

Let us candidly examine into facts and see whether they bear out exactly the above statement, and if so, how far we are right and how far wrong. I hardly know what Architecture, "sitting haughtily on her acropolis," is disposed to do with reference to the Iron question; but I do know that architects humbly sitting in their offices in the fourth story of some down-town building, are daily making extensive contracts for iron-work and materials moulded from the furnace, battered on the anvil, and rolled in the mill, amounting even to 33 per cent. of the cost of structures that are erected of stone and brick; not to be used for *secret construction*, but *avowed* in broad daylight as an essential feature and preponderating element of modern structures. For a building material introduced to our notice but yesterday, as it were, I must confess I think this is doing marvellously well; and even if iron was to be ultimately our sole material, to the exclusion of every other, this progress would be rapid enough to satisfy the most sanguine, considering the short time in which it has been accomplished.

But iron *never can*, and *never will be*, a suitable material for forming the main walls of architectural monuments. The only material for that purpose always has been, and now is, *stone*; and I believe it *always* will be. As for brick they are artificial stone, and only differ from stone in their limited dimensions. Wood, it will be conceded, is only used for temporary purposes, and has never been admitted but as a secondary material for the formation of roofs and for furniture, etc., in monumental art. Nature herself has made all her strongholds of stone; and we, of necessity, have always done, and always will do the same with our structures. We need the

effect of its weight, and bulk, and impenetrableness, which qualities are not to be replaced by any other material now known. Moreover, if iron is offered us by nature in abundance, and if science has made it plastic, stone is more abundant still; and if not as readily formed into shapes suggested by fancy, so long as it holds indisputably the position of the only material suited for the principal construction, we must, according to the correct teachings of our learned friend, not endeavor to become "the lords of nature's offerings for our comfort," but modestly content ourselves with the honorable position of her ally. The whole thing, to use a homely phrase, lies in a nutshell. If iron is a proper building material (and there is no question that for many purposes it is), it will not need our special efforts to elevate it or assist its progress; if not, no reasoning, ever so ingenious, can prove its admissibility as a mere ornamental but unnecessary appendage, and consequently it can never be a desideratum from an æsthetic point of view.

For illustration let us examine the many objects manufactured of iron without the aid of architects, and we will find that wherever iron has been the most suitable material a wonderful variety of new and beautiful forms have sprung into existence; for instance, those of the steam-engine, forms which are beautiful because they bear the impress of their purpose, and because the material is eminently adapted to that purpose. In the construction of buildings, the rolled iron beam and box-girder have been received with eagerness by the profession, and forms have been invented to make them presentable to the eye. Iron has been substituted with great success for inferior materials, such as wood; and I hope the day is not far distant, when it will entirely usurp the place of it. The only weak point of mediæval structures, viz., their wooden roofs, subject to decay, are entirely superseded by more permanent structures of iron within the confines of the present century. Where economy of space is a special object, cast-iron columns are in many cases excellent substitutes for stone. Inclosures, stairs, sashes, doors, shutters, etc., heretofore formed of wood, are now almost exclusively and *very successfully* made of iron, and much has been done to perfect the architectural features developed by these changes.

But iron is not a suitable material, *alone and unassisted* by stone, to form the main walls of a building, nor any *considerable portion* of the same, for the following reasons:

1st. If used economically; that is, so as not to cost more than stone—it has not substance, nor weight, nor rigidity enough in itself to maintain its position.

2d. It is too great a conductor of heat.

3d. It is combustible. In the fullest sense of the word, iron not only loses its stability at a moderately high temperature, but is entirely consumed by exposure to heat for a moderate space of time, say the duration of a fire opposite. The only difference between iron and wood in combustion is, that wood by heat is evolved into gases, which mingle with the air, leaving but a *slight* residue, which we call ashes, while iron absorbs a portion of atmospheric air, and when burnt forms a mass (oxide of iron) larger and heavier than its original bulk.

But I believe it has been conceded by our learned friend that iron needs another material as a backing to make it suitable for the exterior walls of buildings. Then, I ask the question—what is the use of the iron? There is no absolute use for it! The real materials used for construction, and in themselves entirely sufficient, are the stone or brick; and,

it cannot be doubted that the purest era of architecture have been

those in which building material has been used with the most honest regard for its nature and capacity.

I am willing to admit that iron can be cast cheaply in fanciful forms, perfectly beautiful, but I should never think of covering my homely brick house with iron in order to add to its beauty, no more than I should endeavor to adorn a coarse garment with cheap gold tinsel, because that would be more economical than a fine one. A garment of the finest cloth is certainly best, the next best to it is one of avowed coarse material. The best building is a stone building, the next best to it is brick, and lastly, wood. If iron were a suitable material, that would *do*, and I should be delighted to enter into speculations for its decoration, and indulge in rejoicing over the facilities offered in moulding it; but who would not shrink from a present of a purely iron cottage on the Hudson River, either for summer or winter use. I would rather, if a modern material must be used, indulge in gutta serena, and to show that I am not exclusively possessed by antique prejudices, I am willing to compromise by accepting a good stone house, with iron beams, an iron roof, and iron sashes.

Ruskin, the boldest, most earnest, and most devoted advocate of Art, who, with all his idiosyncrasies, has conferred a great boon upon society, and whose career will be appreciated by coming generations, is unfortunately not a mechanic, although a great thinker and lover of art. Had he been a mechanic, he would have advanced as the first reason against the use of cast iron in the exterior of buildings, its practical unfitness—which is indisputable. He treated the question, however, from a purely artistic point only, and I always believed he had firmly established his position. But it appears *one* attentive and able reader of his works is not yet convinced. We are told that his ideas of personal sacrifice in labor and thought, constituting a most important part of the value of a work of art, is only applicable to the spirit of the mediæval age, when the personal labor of hands was the only labor known, while our age, which

We are called upon to express, is not one of individualities, but of aggregates. It is not one of barbarous sacrifice, either of time, labor, money, or material, but of wise economy. Science has nearly destroyed personal labor, and substituted the machine. In fact, we have mechanics now, not handicraftsmen, who work not so much out of devotion to any craft, as for the homely necessities of life. Labor now is the means, and not the end of life. Ours, we are told, is not an age of repose like the mediæval age, but one of clamor and hurry. We therefore, it is concluded, should not have thought for the producer of the effect, but for the effect produced, and criticise that effect abstractedly, as it appears to our sentiments of the beautiful and fitting. If this argument be admitted, no objection remains against ornamentation in cast iron, etc.

Thank God the argument is not admitted. If it were, ours would be a most unfortunate state of society, so deplorable, indeed, that it would become the duty of every good citizen, every moral agent, to alter it, and if he failed, there would be nothing left but to die in despair. When men labor no more because they are interested in the work they perform, but simply to sustain life, the very foundations of society are breaking up, and the strongholds of morality, honesty, and happiness are crumbling into dust. But is this a fact? Can we find even in this corrupt and money-loving city of New York, mechanics who are willing for a dollar advance in daily wages, to abandon their trade, and consent to sweep the streets; or even laborers, who can be hired to carry a heavy stone backward and forward without a purpose for mere hire? Will the member who philosophizes so frivolously be willing to pay the same price in

dollars and cents for a clever print that he would pay for an original painting? Who says that the mediæval age was one of dreamy repose, when there are hundreds of inimitable monuments, the living witnesses of heroic action, without clamor and bustle perhaps, but with no less effect, no less of moral influence, forming as proud a page in the history of the world as our much boasted machines. I highly prize and respect mechanical and scientific progress, and I may say, without boasting, I have ever taken an active interest in it; but I cannot banish the conviction that self-sufficient pride over a few secrets culled in the garden of nature should not make us callous to her immutable laws of beauty, and indifferent as to selection between men and machines. But, happily for our country and for the age we live in, matters have not yet come to such a pass. Wars with the sword and wars of words, political changes, migration from place to place, have crowded out of our midst the intense love of and appreciation for art, possessed by our fathers. The struggle for the necessities of the day have habituated our minds to constant materialism and its attendant selfishness, but with the return of plenty, our hearts are again yearning for the kindly influences of Art, and we are returning to them with rapid strides. Talk of the barbarous sacrifice of labor, time, and money of the past, and the wise economy of the present! What can we do with our wealth when our appetite is satiated and our nakedness covered, but to invest the surplus in works of usefulness and art? Abstract all that Art demonstrates for the gratification of men, and all the labor and treasure squandered on the gratification of his vices and follies, and there is but a minute per centage left for the supply of his absolute necessities.

We have indeed retrograded in art, a fact unfortunately proved by the deliberate utterance of a professional architect like the following:

A mechanical architecture is evidently one of *strict unities and formal repetitions*, . . . and these qualities, under the skillful treatment of the architect, are peculiarly exponential of an age which seeks not for instruction or emotional impulse in a building, as the Greeks did from their friezes and pediments, the Romans from their panelled bas-reliefs, and more especially the mediæval Catholics, from the sculpture of their porches; but rather of a period which, having ample instructional and emotional resources in other directions, expects in an edifice little more than the pure architectural expression of fitness for its peculiar purposes.

Then let us go home and bury our pencils, and let us be architects no more. I have always supposed that it is the high calling of the artist and of the architect, first and foremost, not to inquire what is expected of him and of his structures, but to decide for himself what ought to be their expression, in order to possess the moral effect they should exercise upon the spectator. Had architects ever limited themselves to the expectations of the public, we should have never advanced beyond the log cabin. It is more reasonable to believe that our efforts should always exceed the expectations of those who look up to us as leaders in our advancing progress. I cannot conceive how people can be compensated elsewhere by the loss of instructive and emotional resources in our architectural monuments. Every object in art must, to answer its purpose like objects of nature, possess its emotional and refining influences, and wherever they are lost, it forms a void on the face of God's creation which cannot possibly be compensated for in any other manner. Because iron has been found eminently useful in the building of steam-engines, suspension bridges, and railroads, we are asked

to commemorate that fact not in monuments covered with bas-reliefs of the history of the machine shop, and busts and statues of Watt, and Arkwright, and Fulton, that might go down to posterity as witnesses of our triumphs, but by placing pretty ornaments cast in that material somewhere—we do not exactly know where—about our dwelling houses, which will find their way into the junk-shop before another decade has passed away, or to erect cast iron steeples, a prey to the first hurricane that sweeps the country. We would fain be convinced that the stone tracery on the face of the Strasbourg Cathedral, although of doubtful propriety, might be successfully imitated by placing cast iron screens to hide the homely structures of our less wealthy citizens, that they may successfully vie with their rich neighbor, by making up in cheap and unmeaning ornament their lack of means, and thereby abandon their common sense and good taste; and we are assured of the pleasing effect of hiding a rude arch necessary for the construction behind some neat and elegant tracery of the latest fashion, cast by Machine Brothers & Co., at the rate of a dollar a dozen, five per cent. off for cash. If a bold stone arch is wanted for the security and strength of construction, that bold arch is the most beautiful object I can possibly imagine in such a place, and if you have not the means to organize its masses into mouldings or out foliage of God's nature in its lofty curve, let us see the plain voussours doing their faithful work without a veil of flimsy and trifling ornament, bought at a shop, and hung up with tenpenny nails.

Our learned friend shows strong evidences of a lively appreciation of these and other fallacies; but the subject once taken up, he thinks bold confidence and tact will carry him over the roughest places. It is this facility for convincing superficial minds which prompts me to treat with more severity than I should like to use an argument which would do great mischief in misleading a public, ever eager after novelties. He says:

But as regards iron, such deceit is scarcely possible, for none could for a moment suppose that this material would be used in solid blocks like masonry, and therefore its very texture confesses its superficiality. Besides, well conceived cast iron decoration, avoiding base imitation of solid architecture, would take especial pains to acknowledge this its peculiar quality, either by drawing attention to the constructive expedients which this quality demands, such as rivets and anchors, or by permitting the *backing* material (the use of which has been found absolutely essential to comfort in this climate) to be honestly apparent in solid buttresses or through open work in the iron.

What refreshing simplicity and candor. We are to put up work and materials entirely useless, and for fear that somebody should think that we pretended it to be of any use whatever in the construction of our edifice, we will show by anchors and rivets that it is but a mere shell stuck on the main wall, which answers no purpose and means nothing but innocent and amusing ornament.

I yield to a temptation here to give an oft-repeated definition of architecture. It is the art of expressing in the construction of a building the uses and purposes for which it is erected. The answer which a building bedizened with cast iron ornaments would give to the question, for what purpose the building is erected, would be to me as plain as though it was written upon it with large cast iron letters:

"FOR SHOW, MORE THAN ANY OTHER PURPOSE."

It is hardly necessary to follow our learned friend into all his serious and sportive uses of cast iron, to show the fallacy of

every instance of his application of that cheap material, nor into his bold trifling with lights and shades which are to transform the serious grandeur of the cathedral into the jolly amusements of the kaleidoscope; but I will just reach out my hand and save poor Adam Kraft from his clutches, who for casting St. Sebaldus's shrine (a most original and varied design) in good bronze, is drawn into a quasi precedent for inventing cast iron nets for decent structures. I am glad of the favorable view taken of the facilities offered for painting, for we sadly need them, and also a little more information on the subject; but we must not overlook the fact that on the inside of our castings, where the paint cannot well be renewed, the rust will make sad havoc in the delicate tracery.

I cannot omit, however, to admire the fortitude with which we are expected to meet the grateful task opened to the artist of creating new things for the surprise of man and of writing a new chapter in the history of architecture. I have found it hard work for the last fifteen years to write a short paragraph in a most illegible hand, which I am fearful will not be noticed much by posterity, so I involuntarily shrink from the contemplation of a whole chapter.

Iron will before long divide with stone the realm of legitimate building material, and its study must form a highly important part of our efforts, but it never will supplant stone. Our workmen, like ourselves and the society we live in—yes, the whole existing generation, are far behind our ancestors in the true spirit of art.—It is eminently our province to revive it.

R. M. Hunt, in reply, stated that he was glad to see that Mr. Van Brunt's paper had called forth an elaborate reply from so distinguished a member of the Institute. The subject was one of the greatest interest and importance; indeed, it might almost be considered of vital importance, from the fact that iron, employed either alone or in connection with other materials, such as stone and brick, was, in many instances (in shop and store fronts, for example), the *most appropriate material* that could be used. Where land is exceedingly valuable, the whole lot is often built over for economy of space, and in the absence of interior courts and areas, it is necessary that the façade should become, as it were, one immense window for the sake of light. In employing stone, a great deal of this light would necessarily be excluded. *Utility as well as beauty must be considered*, and it is the great aim of the architect to reconcile and harmonize these two essential requisites, and when in any building such reconciliation is not obtained, the result is a bad architecture. It seemed to Mr. Hunt that iron was peculiarly adapted to produce this reconciliation and harmony in the case of shop-fronts, and he knew of no desirable architectural effects which might not be produced in this material. That iron had not been architecturally used to the extent of its capacities was by no means a proof that it could not be so used. Here, indeed, as has been stated, was a broad field for the true artist to distinguish himself. The difficulty of the problem would exclude all but the few competent to handle the subject, and consequently, a demand would be made on our best talent. Egyptian, Greek, Roman, and Gothic effects had weighed long and heavily on the mind of the public. It would be in vain to attempt to bind the public down to the architecture of past ages. Most of the theocracies and autocracies which influenced architecture in ancient days being undermined and exploded, the civilization of to-day demands an architectural honor peculiar to itself. If educated architects with us will not undertake to keep pace with the spirit and requirements of the age,

they must expect to be, in a great measure, supplanted by those who, not so fettered by books and authorities, exert themselves only to satisfy these requirements in the most direct, simple, and economical way.

Calvert Vaux, while he thought that eventually iron might be more generally employed, saw one great defect in it as an architectural agent, that of its *destructibility* by corrosion and otherwise. The necessity of painting it would in a great measure, he thought, do away with our respect for it. If it could be vitrified or otherwise prepared to guard against the influence of the elements, it might be more acceptable.

Mr. Hunt thought that if iron were more generally employed in architecture, the inventive minds of the day would soon find means to obviate this difficulty—in fact, on the continent it was already obviated. In Egypt, Greece, Italy, and wherever else Mr. H. had seen the different metals employed by the ancients, he had found them *at least* quite as well preserved as any other materials subjected to the same exposures. With regard to the use of color, Mr. H. remarked that our respect for the architecture of the ancients was not lessened by their frequent and almost invariable employment of polychromatic effects. If they considered it so *necessary*, why should we despise the use of color in our monuments? Aesthetically considered, one might object to the painting of Carrara marble to produce a desired effect. In this case it is not perhaps very desirable. But iron, *requiring the protection of color*, thus offers to us an opportunity of developing one of the greatest beauties of architecture. Color he thought as great an aid to architecture as to the sister arts of painting and sculpture.

R. G. Hatfield and J. W. Ritch, in reply to an objection raised to the use of iron on account of its contraction and expansion, stated that in buildings of great extent constructed by them, no objection could be found on that score.

Mr. Hatfield thought that simple effects of mass might be produced in iron—effects by some considered impossible. The objection raised on account of its destructibility could not be supported. Again, hollow walls, so desirable for many reasons, could be erected with economy in this material. He had found no necessity to make use of backing.

The discussion having occupied the attention of the Institute to a late hour of the evening, upon motion, the meeting adjourned.

By order,

R. M. HUNT,
Secretary.

A CORRESPONDENT of the *Athenaeum* sends to that journal the following, as a copy of a circular of a hotel at Pompeii. It is given as the rather free translation of a tolerably correct French advertisement of the same establishment:

"RESTORATIVE HOTEL, FINE-LOOK AT POMPEII.—That hotel open since a very few days, is renowned for the cleanness of the apartments and linen; for the exactness of the service, and for the excellence of the true french-cookery; Being situated at proximity of that regeneration, it will be propitious to receive families, whatever, which will desire to reside alternatively into that town, to visit the monuments new found, and to breathe thither the salubrity of the air.

"That establishment will avoid to all the travellers, visitors, of that sepulchro, and to the artists (willing draw the antiquities). People will find equally thither, a complete sortement of stranger wines, and of the king-dom; and the whole with very moderated prices."

GRACIOUS and ennobling objects are the defence of holy thoughts against the impressions of vanity.—*Digby.*